

AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions, and listings, of claims in the application:

What is claimed is:

Claim 1 (currently amended): Linear polyamino-polysiloxane and/or polyammonium-polysiloxane copolymers containing the repeating unit

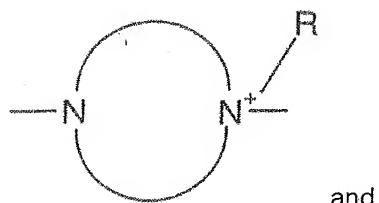
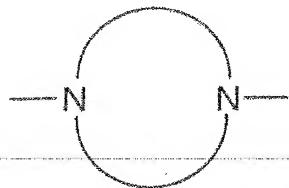
-[Q-V-]- (I)

in which Q is selected from the group consisting of

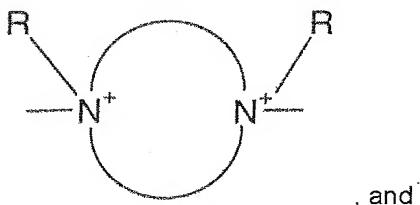
-NR-,

-N⁺R₂-,

a saturated or unsaturated diamino-functional heterocycle of the formulae

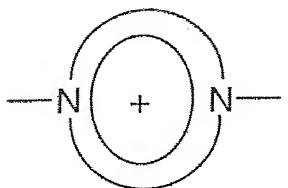


and

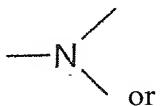


, and

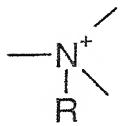
an aromatic diaminofunctional heterocycle of the formula



a trivalent radical of the formula:



a trivalent radical of the formula



in which R in each case is hydrogen or a monovalent organic radical,

Q not bonding to a carbonyl carbon atom,

V represents includes at least one group V¹ and at least one group V²

in which

V² is selected from divalent or trivalent, straight-chain, cyclic or branched, saturated, unsaturated or aromatic hydrocarbon radicals having up to 1000 carbon atoms (not including the carbon atoms of the polysiloxane radical Z², defined below) and containing, if desired, one or more groups selected from

-O-, -CONH-,

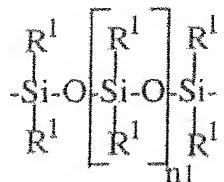
-CONR²-, in which R² is hydrogen, a monovalent, straight-chain, cyclic or branched, saturated, unsaturated or aromatic hydrocarbon radical having up to 100 carbon atoms, which may contain one or more groups selected from -O-, -NH-,

-C(O)- and -C(S)-, and which may if desired be substituted by one or more substituents selected from the group consisting of a hydroxyl group, an unsubstituted or substituted heterocyclic group preferably containing one or more nitrogen atoms, amino, alkylamino, dialkylamino, ammonium, polyether radicals and polyetherester radicals, and, if there are two or more groups -CONR²-, they may be identical or different,

-C(O)- and -C(S)-, and

the radical V² may if desired be substituted by one or more hydroxyl groups, and

the radical V² contains at least one group -Z²- of the formula



in which

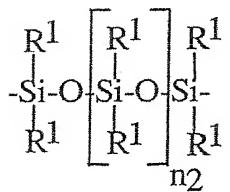
R¹ can be identical or different and is selected from the group consisting of C₁ to C₂₂ alkyl, fluoro(C₁-C₁₀)alkyl and C₆-C₁₀ aryl, and n₁ = 20 to 1000,

V¹ is selected from dihydric or trihydric, straight-chain, cyclic or branched, saturated, unsaturated or aromatic hydrocarbon radicals having up to 1000 carbon atoms, which if desired may contain one or more groups selected from

-O-, -CONH-,

-CONR²-, in which R² is as defined above, it being possible for the groups R² in the groups V¹ and V² to be identical or different,

-C(O)-, -C(S)- and -Z¹-, in which -Z¹- is a group of the formula



in which

R^1 is as defined above, it being possible for the groups R^1 in the groups V^1 and V^2 to be identical or different, and

$n_2 = 0$ to 19,

and the radical V^1 may if desired be substituted by one or more hydroxyl groups,

with the provisos that the trivalent radicals Q and the trivalent radicals V^1 or V^2 serve exclusively for saturating one another within the linear main chain of the polysiloxane copolymers,

and that in the copolymer the molar ratio

$$V^2/V^1 < 1:3,$$

and in which the positive charges resulting from the ammonium groups are neutralized by organic or inorganic acid anions,

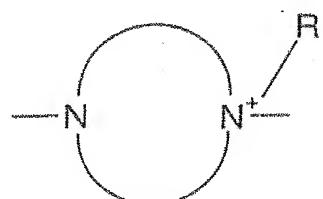
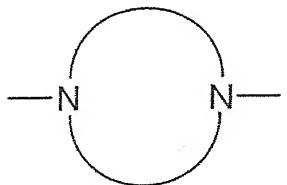
and the acid addition salts thereof.

Claim 2 (currently amended): Linear polyamino-polysiloxane and/or polyammonium-polysiloxane copolymers according to claim 1, in which Q is selected from the group consisting of

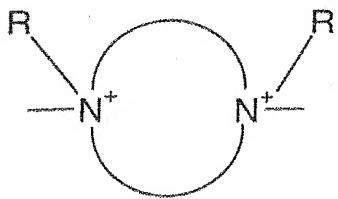
-NR-,



a saturated or unsaturated diamino-functional heterocycle of the formulae

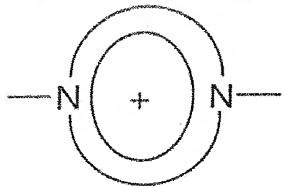


, and



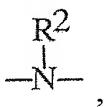
, and

an aromatic diamino-functional heterocycle of the formula

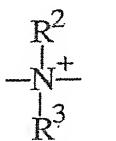


in which R is as defined above, and V¹ and V² are divalent radicals.

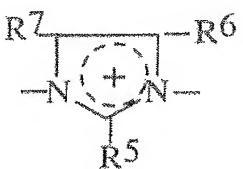
Claim 3 (currently amended): Linear polyamino-polysiloxane and/or polyammonium-polysiloxane copolymers according to claim 1, in which Q is selected from the group consisting of
an amino unit of the formula



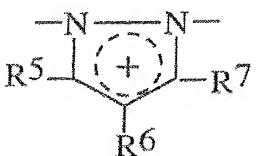
a ammonium unit of the formula



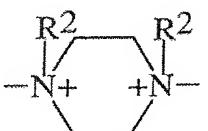
a quaternized imidazole unit of the structure



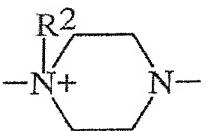
a quaternized pyrazole unit of the structure



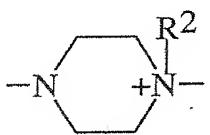
a diquaternized piperazine unit of the structure



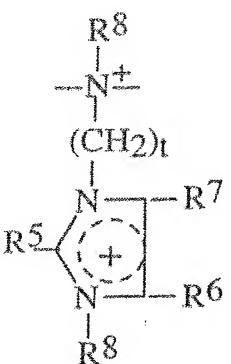
a monoquaternized piperazine unit of the structure



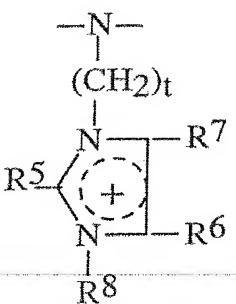
a monoquaternized piperazine unit of the structure



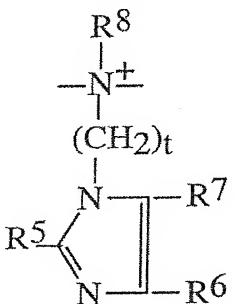
a diquaternized unit of the structure



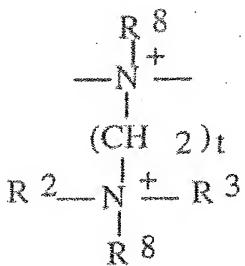
a monoquaternized unit of the structure



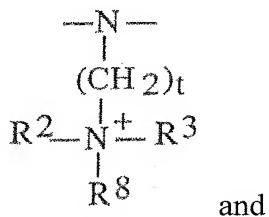
a monoquaternized unit of the structure



a diquaternized unit of the structure

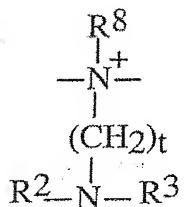


a monoquaternized unit of the structure



and

a monoquaternized unit of the structure



in which

t is from 2 to 10,

R^2 is as defined above, and the definition of R^2 may be identical to or different from the definition of the above group R^2 ,

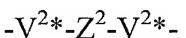
R^3 has the definition of R^2 , it being possible for R^2 and R^3 to be identical or different, or

R^2 and R^3 together with the positively charged nitrogen atom form a five- to seven-membered heterocycle, which if desired may additionally contain one or more nitrogen, oxygen and/or sulfur atoms,

R^5 , R^6 and R^7 can be identical or different and are selected from the group consisting of H, halogen, hydroxyl group, nitro group, cyano group, thiol group, carboxyl group, alkyl group, monohydroxyalkyl group, polyhydroxyalkyl group, thioalkyl group, cyanoalkyl group, alkoxy group, acyl group, acyloxy group, cycloalkyl group, aryl group, alkylaryl group, and groups of the type $-NHR^W$, in which R^W is H, alkyl group, monohydroxyalkyl group, polyhydroxyalkyl group, acetyl group or ureido group, and pairs of adjacent radicals R^5 , R^6 and R^7 may, with the carbon atoms bonding them to the heterocycle, form aromatic five- to seven-membered rings, and

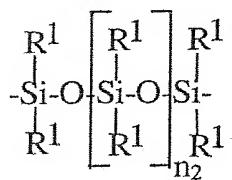
R^8 has the definition of R^2 , it being possible for R^8 and R^2 to be identical or different.

Claim 4 (currently amended): Linear polyamino-polysiloxane and/or polyammonium-polysiloxane copolymers according to claim 1, in which V^2 is a group of the formula



in which Z^2 is as defined above and V^{2*} is a divalent straight-chain cyclic or branched, saturated, unsaturated or aromatic hydrocarbon radical having up to 40 carbon atoms, which if desired may contain one or more groups selected from -O-, -CONH-, -CONR²-, in which R^2 is as defined above, -C(O)- and -C(S)-, and the radical V^{2*} may if desired be substituted by one or more hydroxyl groups.

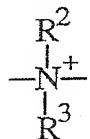
Claim 5 (currently amended): Linear polyamino-polysiloxane and/or polyammonium-polysiloxane copolymers according to claim 1, in which the group V^1 is selected from divalent, straight-chain, cyclic or branched, saturated, unsaturated or aromatic hydrocarbon radicals having up to 600 carbon atoms, which may if desired contain one or more groups selected from -O-, -CONH-, -CONR²-, in which R^2 is as defined above, -C(O)-, -C(S)- and $-Z^1-$, in which $-Z^1-$ is a group of the formula



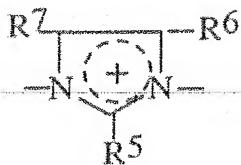
in which

R^1 is C_1 to C_3 alkyl, fluoro(C_3 - C_6)alkyl or C_6 aryl, and
 n_2 is as defined above.

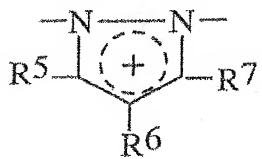
Claim 6 (currently amended): Linear polyamino-polysiloxane and/or polyammonium-polysiloxane copolymers according to claim 1, in which the group Q is selected from:



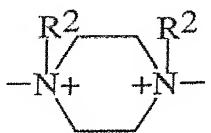
a quaternized imidazole unit of the structure



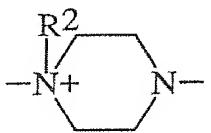
a quaternized pyrazole unit of the structure



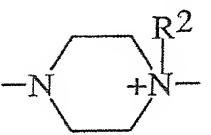
a diquaternized piperazine unit of the structure



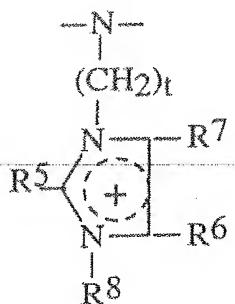
a monoquaternized piperazine unit of the structure



a monoquaternized piperazine unit of the structure



a monoquaternized unit of the structure



in which R², R³, R⁴, R⁵, R⁶, R⁷ and R⁸ are as defined above.

Claim 7 (currently amended): Linear polyamino-polysiloxane and/or polyammonium-polysiloxane copolymers according to claim 1, in which the molar ratio V²/V¹ complies with the relationship

$$0.0005 < V^2/V^1 < 0.3.$$

Claim 8 (currently amended): Linear polyamino-polysiloxane and/or polyammonium-polysiloxane copolymers according to claim 1, in which the molar ratio V²/V¹ complies with the relationship

$$0.005 < V^2/V^1 < 0.2.$$

Claim 9 (currently amended): A process for preparing the linear polyamino-polysiloxane and/or polyammonium-polysiloxane copolymers according to claim 1, in which

- a) at least one amine compound selected from a diamine compound and/or a primary or secondary monoamine compound is reacted with at least two difunctional organic compounds capable of reacting with the amino functions of the amine compound, the molar ratio of the organic compounds being chosen so as to meet the condition V²/V¹ < 1:3,
- b) at least two moles of an amine compound selected from a diamine compound and/or a primary or secondary monoamine compound are reacted with one mole of a difunctional organic compound capable of reacting with the amino functions of the amine compound, to form a diamine compound (monomer), which is subsequently reacted with at least one amine compound selected from a diamine compound and/or a primary or secondary monoamine compound and with at least one further difunctional organic compound capable of reacting with the amino functions of the amine compounds,
- c) an amine compound selected from a diamine compound and/or a primary or secondary monoamine compound is reacted with a difunctional organic compound capable of reacting with the amino functions of the amine compounds, to form a diamine compound (amino-terminated oligomer), which is subsequently reacted with at least one difunctional organic compound capable of reacting with the amino functions of the diamine compounds,
- d) an amine compound selected from a diamine compound and/or a primary or secondary monoamine compound is reacted with a difunctional organic compound capable of reacting with the amino functions of the amine compound, to form a difunctional compound capable of reacting with amino functions (difunctional oligomer), which is subsequently reacted with at least one amine compound

selected from a diamine compound and/or a primary or secondary monoamine compound and with at least one further compound capable of reacting with amino functions,

it being possible if desired to add monofunctional, preferably tertiary, monoamines or suitable monoamines not capable of chain propagation, and/or monofunctional compounds capable of reacting with amino functions, as chain terminators, and the stoichiometry of the amino functions and the functional groups capable of reacting with amino functions always being approximately 1:1 in the last stage of the reaction, and it being possible for any amino functions present to be protonated, alkylated or quaternized.

Claim 10 (original): The process according to claim 9, in which the functional groups of the difunctional compounds capable of reacting with amino functions are selected from the group consisting of epoxy groups and haloalkyl groups.

Claim 11 (currently amended): The use of A process of applying a cosmetic comprising applying a composition including the linear polyamino-polysiloxane and/or polyammonium-polysiloxane copolymers according to claim 1, in cosmetic formulations, in laundry detergents or for surface treating substrates.

Claim 12 (currently amended): The use according to claim 11 for fiber treatment and/or fiber finishing. A process of treating fibers or finishing fibers comprising applying the linear polyamino-polysiloxane and/or polyammonium-polysiloxane copolymers according to claim 1

Claim 13 (currently amended): Compositions comprising at least one linear polyamino-polysiloxane and/or polyammonium-polysiloxane copolymer according to claim 1, together with at least one further ingredient customary for the composition.

Claim 14 (currently amended): A laundry detergent composition comprising the polyamino-polysiloxane and/or polyammonium-polysiloxane copolymers eomposition according to claim 1. 13, being a laundry detergent composition or a cosmetic composition.

Claim 15 (new): A process of washing laundry comprising applying the polyamino-polysiloxane and/or polyammonium-polysiloxane copolymers according to claim 1 to laundry.

Claim 16 (new): A process of surface treating a substrate comprising applying the polyamino-polysiloxane and/or polyammonium-polysiloxane copolymers according to claim 1 to the substrate.